

The instruments, provisions, and tents for each officer are to be conveyed on a horse and four mules. They will commence their surveying work in the south of each of the three Algerian provinces, and their position, scattered as they will be singly over the whole of Algeria, in the midst of semi-subjugated tribes, will be a delicate and perilous one. They will probably return to Paris about the end of May.

At the last meeting of the Geographical Society of Paris it was stated that Col. Prejevalski had discovered the sources of the Yang-tze-kiang.

The last number of the *Boletín de la Sociedad Geográfica de Madrid* contains a first instalment of Capt. Eduardo O'Connor's official report on his recent exploration of the Upper Limay (Rio Negro) and Lake Nahuel-Hualpi. This report is of considerable geographical interest, as it embodies a detailed account of the first successful attempt to navigate the Rio Negro, from its mouth in the Atlantic to its source in the romantic Lake Nahuel-Hualpi in the heart of the Chilean Andes. As far as the Colluncurá (Catapuliche) confluence the expedition was able to proceed on board the *Rio Negro* steamer, but beyond that point it had to make its way in an open boat, which had in many places to be hauled over the numerous rapids obstructing the navigation of the Upper Limay, or furthest southern head-stream of the Rio Negro. Here the river flowed mainly in a narrow rocky bed, contracting at some points to 120 and even 100 feet, with a current varying from seven to nine, and even eleven miles an hour at the most difficult rapids. But beyond the confluence of the Treful, in 40° 42' S. lat., the reefs and other obstructions disappeared, the current fell to a mean velocity of five or six miles, and as the stream is very deep it would be accessible to steam launches in this section all the way to the lake. Approached from the Limay this alpine basin presented a charming prospect, winding away to the right in an endless series of rocky inlets or wooded creeks, opening out to the left in broad and slightly undulating grassy savannahs. The hills rise in some places to a height of 700 or 800 feet above the lower wooded slopes, breaking into sharp peaks, crags of fantastic shape, or rocky walls, as uning here and there the appearance of cyclopean fortifications. The horizon was bounded in the distance by an extensive range of lofty sierras covered with snow, and like the lower hills often assuming the most varied and capricious forms. The deep blue waters of the lake are broken only by a solitary island of large size covered with dense vegetation, and intersected by regular ranges of hills from 300 to 400 feet high. The surrounding country appears to be uninhabited, and on calm days, rare in this breezy region, all nature is wrapped in the stillness of death, and the glassy surface of the lake unbroken by a single ripple.

### ASTRONOMICAL PHENOMENA FOR THE WEEK, 1885, FEBRUARY 15-21

(For the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

#### At Greenwich on February 15

Sun rises, 7h. 16m.; souths, 12h. 14m. 20' 3s.; sets, 17h. 13m.; decl. on meridian, 12° 30' S.; Sidereal Time at Sunset, 2h. 56m.

Moon (New at 2h.) rises, 7h. 6m.; souths, 12h. 29m.; sets, 18h. 0m.; decl. on meridian, 8° 9' S.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on Meridian
Mercury ...	6 44 ...	11 1 ...	15 17 ...	19 47 S.
Venus ...	6 36 ...	10 57 ...	15 18 ...	19 5 S.
Mars ...	7 20 ...	12 12 ...	17 4 ...	13 49 S.
Jupiter ...	17 28* ...	0 35 ...	7 42 ...	12 8 N.
Saturn ...	11 18 ...	19 21 ...	3 25* ...	21 34 N.

\* Indicates that the rising is that of the preceding, and the setting that of the following nominal day.

#### Occultation of Star by the Moon

Feb.	Star	Mag.	Disap.	Reap.	Corresponding angles from ver- tex to right for inverted image
			h. m.	h. m.	°
20 ...	38 Arietis ...	5 ...	19 41 ...	20 1 ...	211 246

### Phenomena of Jupiter's Satellites

Feb.	h. m.		Feb.	h. m.	
16 ...	6 20	I. ecl. disap.	19 ...	0 25	I. tr. egr.
	19 21	III. ecl. disap.	19 15	I. occ. disap.	
	23 9	III. occ. reap.	20 41	IV. ecl. reap.	
17 ...	3 40	I. tr. ing.	21 34	I. occ. reap.	
	6 0	I. tr. egr.	23 38	II. tr. ing.	
18 ...	0 49	I. ecl. disap.	20 ...	2 33	II. tr. egr.
	3 8	I. occ. reap.	18 51	I. tr. egr.	
	5 22	II. ecl. disap.	21 ...	18 32	II. occ. disap.
	22 6	I. tr. ing.	21 33	II. ecl. reap.	

The Occultations of Stars and Phenomena of Jupiter's Satellites are such as are visible at Greenwich.

Feb.	h.	
15 ...	4 ...	Mars in conjunction with and 4° 30' south of the Moon.
17 ...	1 ...	Saturn stationary.
19 ...	8 ...	Jupiter in opposition to the Sun.

### CATALOGUE OF EARTHQUAKES<sup>1</sup>

THE importance of earthquakes as factors in geology tends to be more and more appreciated, and the seemingly increased seismic activity so strongly manifested in different quarters of the globe during the last few years has greatly stimulated the interest in, and the study of, these wonderful phenomena. Amongst many contributions to this branch of geology, have appeared quite recently, this catalogue and map, of which we have given the title, and which have followed other papers by the same author relative to this series of phenomena, published in the *Proceedings* of the Royal Irish Academy.

The earthquake catalogue and map now given by Prof. O'Reilly is based upon a very interesting relation of jointing and fissuring to the physical geography of a country, but more particularly to the coast-line directions. This relation he has shown to be very marked for the east coast of Ireland (see *Proc. Roy. I. Acad.*, 2nd series, vol. iii.; *Science*, No. 8, May, 1882, and vol. iv.; *Science*, No. 2, 1884); and, considering that much of the fissuring of the earth-surface is mainly due to earthquake action, he looks upon the systems of jointing and fissuring of a country, and consequently their correlated coast-lines, as so many records of past earthquake action; the only ones, in fact, left us in many cases, and (taking into consideration the poverty and meagreness of historical records in this respect) the most valuable records of these phenomena we have extant. On the other hand, the lists of Mallet, Perrey, Fuchs, &c., present earthquakes in a purely chronological order, are difficult to consult and but little accessible, and in them the events stand out independently, and to a very great extent without apparent connection one with the other, while we know that geological change is the result of a sum of actions taking place continuously in certain localities, and extending through immense durations of time. It has seemed to the author of the present "Catalogue" that it would be useful to present the earthquakes of the three kingdoms in a summarised and connected form, and for that purpose arranged alphabetically, so that it may be possible to ascertain for a given point or locality the sum of earthquake action having occurred therein during historical time. The "Catalogue" thus formed merely gives the years of occurrence for a given place or district, and in this manner indicates frequency of occurrence sufficiently, while serving at the same time as a sort of year and place index for the larger collections. From it he has been able to represent graphically the distribution of earthquakes over the three kingdoms by adopting conventional tints and marks to indicate extent of action and frequency of occurrence, the only factors which it is possible at present to so represent.

From this map it would appear that Great Britain has been much more subject to shocks than Ireland during the period embraced by the records. That as regards Ireland the points of more frequent action lie near the coast or on it; that in Great Britain the south coast presents a number of points of activity situated approximately on a same line, in all probability con-

<sup>1</sup> "Catalogue of Earthquakes having occurred in Great Britain and Ireland during Historical Time; arranged relatively to Localities and Frequency of Occurrence, to serve as a Basis for an Earthquake Map of the three Kingdoms." With Map. By Jos. P. O'Reilly, C.E., Professor of Mining and Mineralogy, Royal College of Science, Dublin. (*Trans. Roy. I. Acad.*, vol. xxviii.; *Science*, part xvii., September, 1884.)

nected with a system of jointing corresponding to the general direction of the coast; that therefore the observed connection between volcanoes and coast-lines would hold good to a certain extent as regards these and earthquake action, so intimately related to volcanic action; that, as has been lately remarked by Mr. Wm. White in *NATURE* (December 25, p. 172), Lancashire is apparently a centre of frequent action, and that there may be a further relation to be found between coal-fields and earthquakes than that recognised up to the present.

It is certainly interesting to note that many of the localities affected by the earthquake of 1884 in the south-east of England lie on or quite near a great circle, which Prof. O'Reilly designates "the west coast of Morocco great circle" (that is a great circle of which the starting-point or part is a portion of that coast lying between Cape Blanco and Cape Juby), traced *à priori*, and which was shown on the Earthquake Map of Europe submitted by him at the Swansea meeting of the British Association in 1881. It will be interesting to note to what extent the complete report on that earthquake, which may soon be looked for, will correspond with his theoretical lines.

As a first attempt to graphically represent the earthquakes of a country relatively to their frequency, Prof. O'Reilly's map has much to recommend it, and, more fully developed and more completely worked out, such maps may yet be considered (to use his own words) as "the necessary *pendants* of geological maps."

### JAPANESE LEARNED SOCIETIES

WHEN the Japanese Government decided to participate in the Health Exhibition last year, and to devote special attention to the educational portion of their section, they issued a small pamphlet relating to modern Japanese education. This explained in full the national system organised and put in working order in the last ten years; it dealt with the various classes of schools, from Kindergartens to the University, the technical schools, libraries, and educational museums, the history of ancient Japanese education, &c. The pamphlet showed that the Government of Japan was doing its duty so far as education is concerned; but the reader was left to collect for himself how far the people were following in the wake of their rulers. Since the close of the Exhibition the Japanese Commissioner has re-issued the report, with the addition of a statement of the various learned societies formed for purposes connected with science, literature, and education in that country in recent years. These are purely private associations; some of them are confined to localities removed from the large towns, and bespeak a wide and general interest in these subjects amongst the mass of the people themselves. The work of organising these, when the spirit once existed, cannot have been great, for the Japanese have had for ages their associations of men possessing common tastes, or a common love for a particular subject, whether literature, education, fencing, chess, the study of medicine or of Chinese. These organisations are quite familiar to them, and the work of running the new metal into the old moulds was doubtless not a very difficult one. Accordingly, Mr. Tegima's list is a full one, and here and there it might be suggested that two, or even three, of the separate societies could amalgamate with benefit. Amongst these noted we find the educational society of Japan, which has for its object the study, improvement, and advancement of education; various local societies also intended for the improvement of educational methods in their respective districts; the Seismological Society, perhaps the best known of all in Europe. There are two branches of this, the foreign and the native, the former being the parent society. The "Society of Specialities," which has in view the study "of various special branches of science." The Physical Society, devoted exclusively to the study of the higher physics; there appears to be a second Society of Physics, "composed of professional scholars for the purpose of inquiring into the principles [of physics?] and of interchanging knowledge among the members"; the Mathematical Society for the study of the higher mathematics, and also to translate and compile works on that subject. Among the associations for more general objects we find one of French scholars, foreign and native, for the study of that language, and the general interchange of knowledge, one for the study of the moral sciences, another devoted to European and Asiatic philosophy. The French scholars are not allowed to have it all their own way, for a rival devotes its energies to the study of the German language and laws; Hindoo philosophy

also has its own special votaries who have formed themselves into an association for the investigation of this misty subject. The Biological Society of the University of Tokio (founded by Prof. Morse) is among the most energetic of young Japanese societies; the Association for the Translation of the Technical Terms of Physics is a most necessary one, and has a difficult and responsible duty under the present system of translating to fulfil. Sooner or later Japanese and Chinese students will have to adopt most of the technical terms of all departments of science employed in the West; the present plan of seeking to translate them in a rough and fanciful way, and thus forcing the student to learn a new language before he can learn a science, is too clumsy and unsatisfactory to last. Why, for example, oxygen should not be called oxygen by the Japanese student, instead of by some Japanese compound term which is not in the least more explanatory to him, is not quite clear. Meantime a society which will exercise a supervision over the translation of technical terms, and thereby secure uniformity, cannot fail to be useful. The Chemical Society, besides devotion to the science of chemistry, has also for one of its objects the establishment of a regular terminology. The Engineering, Law, Agricultural, Fine Arts, Medical, and Pharmaceutical societies speak for themselves. A second medical society seeks to secure the propagation of sound notions of elementary medicine amongst the common people; in this it is assisted by the members of the Society of Hygiene, who diffuse a general knowledge of sanitary matters. It is pleasant to see that old Japan is not forgotten in this crowd of young associations. The members of a Society of Letters study all branches of Chinese and Japanese literature, while the "Society of Japanese Literature" devotes itself wholly to the study of the etymology and syntax of the Japanese language and to the more general employment of the ancient syllabaries, in place of Chinese characters, in writing. A third literary society has for its object "the interpretation of the moral principles. It aims also to encourage good customs, to promote literature, to educate youth, to diffuse knowledge, and to cultivate moral nature"—a tolerably comprehensive programme. Finally, the recent Fisheries Exhibition has given rise to a Japanese Marine Product Society.

Mr. Tegima's statement is an incomplete one. It deals mainly with associations existing in the capital, and makes little reference to any in other large towns in the Empire, such as Osaka, Nagoya, Niigata, Nagasaki, &c. And even as a list of the Tokio societies it is incomplete. No mention, for example, is made of the most numerous, wealthy, and influential of all—the Geographical Society of Japan; nor is the Dendrological Association mentioned; nor is reference made to the new and interesting society called the *Roma-ji-Kwai*, which has for its object the substitution of Roman letters in Japan for the Chinese characters and the native syllabaries. This Spelling Reform Association has set before itself a huge and radical reform, in comparison with which that of our own Spelling Reform Society is trifling and superficial. Its objects, however, appear hardly practicable, if one may venture to use that expression, of any reform in Japan. But enough has been said to show that the seed sown with such care by the Government is producing a rich harvest among the people of Japan.

### THE PROPOSED TEACHING UNIVERSITY FOR LONDON

A LARGELY-ATTENDED and influential meeting of the Association for Promoting a Teaching University for London was held last Thursday at the rooms of the Society of Arts, John Street, Adelphi, under the chairmanship of Lord Reay, the President of the Association, whose objects are—(1) the organisation of University teaching in and for London in the form of a Teaching University, with faculties of arts, sciences, medicine, and laws; (2) the association of University examination with University teaching, and direction of both by the same authorities; (3) the conferring of a substantive voice in the government of the University upon those engaged in the work of University teaching and examination; (4) existing institutions in London of University rank not to be abolished or ignored, but to be taken as the bases or component parts of the University, and either partially or completely incorporated, with the minimum of internal change; (5) an alliance to be established between the University and the professional corporations, the Council of Legal Education as representing the